# UTILITIES INTEGRATED MASTER PLAN

## Principles of Sound Water Management
## Water Policies Chapter

November 15, 2012

City of Flagstaff - Utilities Division

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# Introduction

The primary purpose of the Utilities Integrated Master Plan - Water Policy chapter is to provide the fundamental principles and guidelines for how the Utilities Division achieves the goals and objectives outlined by City Council and upper City Management. The objective of these policies is to: preserve the public's trust in our water, sewer and stormwater systems through compliance with state and federal water quality, water management and flood plain management laws; guide strategic long-term planning; and demonstrate leadership in the stewardship of our limited natural resources. These policies emphasize the importance of water conservation, the protection of our natural environment and the development and maintenance of a redundant water supply that will assist in satisfying demand during a prolonged drought.

The principles of sound water management contained within these water policies will support and build on the policies contained within the Water Element section of the Regional Land Use and Transportation plan and its subsequent updates. These policies will provide guidance to staff on how most effectively to develop, recommend and implement the numerous programs administered by the Utilities Division.

The Utilities Division is comprised of two Enterprise Funds; water, wastewater and reclaimed water is one fund; the second separate fund is stormwater. The fiscal intent is to balance expenses (O&M and Capital) versus income from rates and capacity fees.

These policies refer to conducting periodic master planning efforts for water resources, and Utilities infrastructure including the water system, wastewater system, reclaimed water system, stormwater drainage and technology pertaining to the water and sewer system's operation and control also known as a Supervisory Control and Data Acquisition or SCADA. All master planning efforts should take into account the Utilities Division's potential impacts, vulnerability and assessment of risk from climate variability and weather related effects. The goal should be to build in resilience in the operations of the Utilities Division in order to protect against the risk from climate variability and weather related impacts to the City's water supplies and Utilities infrastructure. The City undertook a Resiliency and Preparedness study in 2012 and the results and recommendations of this study should be considered in all master planning efforts.

## A. Finance

The City has an important responsibility to its citizens to carefully account for public funds, to manage its finances wisely, and to plan for the adequate funding of services desired by the public including water, sewer, reclaimed water services and stormwater management. Therefore, the Water-Sewer-Reclaimed Water Utility and the Stormwater Utility shall be financially self-supporting enterprises with all costs associated with each operation to be funded from revenues derived from the sale of potable water or reclaimed water or the assessment of fees for sewer system or storm water system services.

### A1 Enterprise Funding: Water – Sewer – Reclaimed Water Utility

Policy A1.1 The annual payment for debt service should not exceed 20% of total annual Operating Revenues.

Policy A1.2 The Water-Sewer-Reclaimed Water Utility shall have a goal of maintaining more than 25% of the total estimated annual Operational Revenues in reserve for known future obligations plus an allowance for unbudgeted contingencies. This policy would not include Federal Support for disaster relief.

Policy A1.3 In the event that the Mayor and City Council determine that there exists the need to set aside a minimum amount of water to be sold at a reduced rate or to grant some other forms of subsidy for users within the City's service area, the costs of such subsidies shall be from other sources and not from water rates, fees or charges.

Policy A1.4 The City shall not enter into a development agreement for any purpose that permits the developer to pay reduced water rates and/or reduced capacity fees unless such rates are collected from a non-utility source.

Policy A1.5 The City's policies on the collection of payments for water and sewer capacity fees, water meter fees, service charges and other fees shall be applied consistently and as follows:.

Strategy A1.5a A customer must provide proof that either a building or grading permit application was submitted to the Community Development Division prior to paying any fees.

Strategy A1.5b All fees must be paid in full at the time of payment.

Strategy A1.5c If fees are scheduled to change, the customer has until one business day prior to the scheduled fee change to pay all fees under the current fee schedule. A customer may not use proof of an application submission prior to the fee schedule change to

pay fees under the previous fee schedule after the fee schedule change date.

Strategy A1.5d If a customer pays all fees but does not install the water meter and connect to City services before the building permit expires, the customer is subject to the latest fee schedule and any increase in fees will be assessed on the location. A decrease in fees will not be recalculated and refunded.

Strategy A1.5e If a customer changes the size of the water meter after all fees are paid, the customer is subject to the latest fee schedule and any increase in fees will be assessed on the location.

Strategy A1.5f All capacity fees are non-refundable and non-transferable from one parcel to another parcel.

Policy A 1.6 The City shall have a goal of full Cost Recovery for reclaimed water that is delivered outside of the City's incorporated limits.

**A2 Enterprise Funding: Stormwater Utility**

Policy A2.1 The Stormwater Utility shall collect revenues from properties with impervious surfaces according to an Equivalent Rate Unit (ERU) basis (See definition that follows). The Stormwater Utility shall have a goal of maintaining more than 10% of the total estimated annual Operational Revenues in reserve for known future obligations plus an allowance for unbudgeted contingencies.

Policy A2.2 The Stormwater Utility shall issue runoff credits for properties implementing eligible stormwater catchment systems as further described in the stormwater manual.

**A3 Rate Design Elements: Water – Sewer – Reclaimed Water**

Policy A3.1 Water, sewer and reclaimed water rates should be set on a cost-of-service basis. Commodity charges should reflect the costs across all customer classes. Rate structures should be designed with the goal of encouraging water conservation. The design of recommended rates should include provisions that will provide a minimum of 25% of revenues from fixed costs and the remainder from commodity charges. The design should also anticipate a balance between conservation (commodity charges) and revenue stabilization (fixed charges).

Policy A 3.2 Water, sewer and reclaimed water rates shall be internally reviewed annually. Any anticipated changes in the rate structure should be implemented in a

timely manner in order to avoid large-scale shifts in rates. A formal rate study will be performed every 3 years.

Policy A 3.3 Water, sewer and reclaimed water fixed and variable rates for customers located outside the City limits shall be always be over and above the ~~City's~~ charges to customers within City limits and will be set during a formal rate study as per Policy A.3.2. The purpose of the increased charge is to capture those hidden costs that customers within the City limits pay and non-residents do not such as fixed costs (e.g., water meter charges).

Policy A 3.4 Reclaimed water rates should be set on a cost-of-service basis. In the event that cost-of–service rates discourage demand for reclaimed water, the rate for purchase of reclaimed water shall be adjusted to encourage its use. The adjusted rate will be subsidized by the water rate customers.

Policy A 3.5 Capital projects which would require the utility to take on debt greater than Policy A1.1 are not financially sustainable due to their potential impact on existing rates and capacity fees. Financing for large projects may require funding support from such sources as the federal government, state government, new taxing district or authority, public-private partnership, sales tax or a combination of these sources.

## A4 Private Water Company Acquisition

Policy A 4.1 The City of Flagstaff shall have a goal of becoming the sole retail water, sewer and reclaimed water provider within its incorporated boundaries. From time to time, the City may have opportunities to purchase other existing water delivery or sewer collection systems adjacent to or near the City's existing service area. The following criteria will be used to evaluate such opportunities:

Strategy A4.1a The purchase must prove to be beneficial to the customers of the Utility.

Strategy A4.1b The private water company must possess sufficient water supplies of sufficient capacity that meet applicable federal and state drinking water quality standards.

Strategy A4.1c The components of the private water company's infrastructure (water production, pipelines, fire hydrants, etc.) must be constructed to existing City utility standards or be upgraded to those standards prior to acquisition.

Strategy A4.1d The purchase of the private water company must not result in a net increase of costs to City water, sewer or reclaimed water customers.

Strategy A4.1e The new service area shall be within existing City limits or be annexed into the City of Flagstaff prior to purchase.

Definitions:

**Cost of Service:** An evaluation process by which revenue requirements are used to generate a system of fair and equitable costs in proportion to the service received for each user classification.

**Equivalent Rate Unit (ERU)**: The basic unit for the computation of stormwater service fees. All property in the City is subject to the periodic stormwater management utility service charge. The fee is based on number of ERUs, each ERU is equal to 1,500 square feet of impervious area.

**Fund Balance:** An account defined as the difference between the assets and liabilities of a fund. It is used as a measure of the amount available to budget or spend in the future.

**Future Obligations:** Previously identified capital improvement projects, including those approved capital projects contained in the five-year Capital Improvement Program.

**Operational Revenues**: Income derived from sources related to the utilities everyday business operations. Operational revenues consist of revenues from sales of a commodity (water, sewer, reclaimed water) and miscellaneous service revenues. For example, water sales and installation services generate on-going operating revenue, whereas the sale of City property is considered to be an unexpected, or "one-time", event.

## B. Water Resource Management

### B1 Use of Renewable Water Resources

Maximizing the use of renewable water supplies is an important water management tool to minimize the long-term impacts of over-drafting a community's groundwater resources. Examples of local renewable water supplies for the City of Flagstaff include surface water from Upper Lake Mary, spring flow from the Inner Basin and directly delivered reclaimed water. Utilizing renewable water resources as the City's primary supplies will not only help Flagstaff be sustainable but it will also save groundwater for times when some of these surface water supplies are unavailable or severely limited due to prolonged drought conditions.

Policy B1.1 The City should maximize the use and delivery of local renewable water supplies that are available in any given year.

Policy B1.2 The City should consider developing a diverse renewable water supply portfolio to ensure redundancy in the event one supply is unavailable or severely limited due to prolonged drought conditions. A diverse water supply shall consider the following:

Strategy B1.2a The types of water supplies (e.g. groundwater, surface water) and the types of production infrastructure (e.g. wells, water treatment plants) necessary to treat and deliver each water supply.

Strategy B1.2b The water supplies should be hydrologically separate and distinct (e.g., groundwater, surface water, reclaimed water).

Strategy B1.2c The temporal aspect of the water supply for redundancy. For example, will the redundant water supply be available for a long time (i.e. groundwater) or for a shorter time frame (e.g. surface water in Lake Mary). When considering production infrastructure (i.e. wells), the redundancy should be available permanently.

Strategy B1.2d The timing and costs associated with maximizing these renewable resources.

### B2 Water Adequacy – Adequate Water Supply Program

This policy relates to the City of Flagstaff maintaining its Designation of Adequate Water Supply (Designation) by the Arizona Department of Water Resources (ADWR). The primary purpose to maintain the Designation is to ensure that all new development within City limits has a proven 100-year water supply prior to construction. The benefit to the

community is to ensure the public's trust in the City's water resources and provide for long-term economic vitality and sustainability. This policy relates strictly to the tracking of and commitment to water resources and does not address the infrastructure requirements to deliver and utilize the water supply. Infrastructure requirements are addressed in Policy F.1 – Utilities Master Planning.

Policy B.2.1 Communication: The Utilities Division will provide the primary point of contact for all staff-level communication with both the ADWR and U.S. Bureau of Reclamation on water resources and water conservation regulatory related issues.

Policy B.2.2 Adequate Water Supply Program: the City shall develop a water management program to come into and remain in compliance with the Adequate Water Supply Program by demonstrating, at a minimum, that its water supplies are physically, legally and continuously available for at least 100-years.

Strategy B2.2a The Utilities Division shall conduct hydrologic studies necessary to estimate its 100-year volume of water supplies considering groundwater, surface water and reclaimed water per state regulations. These studies should at a minimum include partnering in the development, maintenance and update of a computerized groundwater flow model of the Coconino Plateau's regional hydrology in order to assist in evaluating the sustainability of the City's groundwater supplies over the long-term, their resilience from drought and to support the City's Designation of Adequate Water Supply. These studies should be reviewed and updated on a regular basis as more technical information becomes available.

Strategy B2.2b The Utilities Division will use data developed within the Integrated Utilities Master Plan - Water Resources Chapter (Policy F.1) to estimate the City's water demand needs at build-out.

Strategy B2.2c The City's water supplies, as determined by Policy B.2.2a, shall be dedicated to all existing developed parcels, new projects developed in accordance with their zoning designation on the Zoning Map, and new Subdivision Final Plats on a first come, first serve basis. The City should also consider the economic value of water and recommend a pre-defined volume of water to set-aside that is sufficient to encourage and maintain economic development and vitality.

Strategy B2.3d For each new Subdivision Final Plat, Zoning Map Amendment or Major/Minor Amendment to the Regional Plan an estimate of the annual average and peak day volume of water for the

development will be at built-out will be provided. The projected annual average water needs shall be calculated using the City of Flagstaff Engineering Standards and/or the water use metrics contained within the Utilities Department Integrated Water Master Plan – Water Resource Chapter. The build-out estimates, when appropriate, should consider additional water conservation measures that may reduce the development's projected annual average water needs into the future.

Strategy B2.3e The Utilities Division will commit, track and set aside with different time periods the necessary annual average and peak day water supply for all new Subdivision Final Plats and new projects developed in accordance with their existing zoning designation on the Zoning Map. Annual average and peak day water supply for Major amendments shall also be tracked but not committed or set aside.

Strategy B2.3f The developer will be required to obtain a building or grading permit within the specified timeframes outlined below or risk losing the committed water resources:

- Subdivision Final Plat – there will no time limit on the reservation of the water resources committed for the subdivision as long as the City maintains its Designation of Adequate Water Supply with the Arizona Department of Water Resources
- Vacant Property Seeking Development Approval (e.g. Site Plan Review) – for all new development proposed consistent with the existing zoning as designated on the Zoning Map, there will no time limit on the reservation of the water resources committed as long as the City maintains its Designation of Adequate Water Supply with the Arizona Department of Water Resources
- Zoning Map Amendment and Minor Amendments to the Regional Plan – for such new development, water resources will only be committed for no longer than the time frame associated with the zone change approval within which the applicant has to commence construction (typically 2 years) as long as the City maintains its Designation of Adequate Water Supply with the Arizona Department of Water Resources.
- Major Amendments to the Regional Plan – there will be no reservation of committed water resources for these amendments.

This Strategy should only be applicable to commercial, industrial and multi-family developments and those residential subdivisions that contain six (6) or more individual lots. This policy is not applicable to a single lot land owner within a pre-existing built-out subdivision.

Strategy B2.2g The Community Development, Economic Vitality and Utilities Divisions will coordinate regarding the City's available uncommitted water resources that can be allocated to priority developments shown in the voter approved Regional Plan. This will occur before approving any new extension, variance, or other changes to any final site or construction plans that results in the allocation of water beyond that what was originally approved.

Policy B 2.3 Compliance: The City shall apply for and maintain its status as a Designated water provider as determined by the ADWR. Additionally, City of Flagstaff will submit the committed demands for each Subdivision Final Plat and permits granted for existing lot developments on an annual basis to the ADWR as currently required by law.

## B3 Water Quality

The mission of the City of Flagstaff's Utilities Division is to professionally and cost effectively provide water, wastewater and stormwater services. This is accomplished by being recognized as a leader of excellence in water utility services. Drinking water safety is a primary concern of Utilities Division; safety shall be achieved by utilizing technology and qualified staff members to monitor production systems, sample the distribution system and evaluate opportunities to continually enhance the program while being cost effective to our customers. The City shall develop water quality programs that provide potable water which is treated, tested and safe for Flagstaff citizens, businesses and visitors and meets all current water quality regulations.

Wastewater quality shall be established through an active pretreatment and monitoring program which ensures the safety of the City's infrastructure and adherence to regulations. Reclamation facilities are designed to permit the use of reclaimed water for either direct reuse or indirect reuse and shall be monitored in accordance with each facility's permit. The City shall develop water quality programs that provide reclaimed water which is treated, tested and safe for Flagstaff citizens, businesses and visitors, and meets all current water quality regulations.

### Water

Policy B 3.1 The City shall develop water treatment facilities which:

a. Provide quality water which meets current federal regulations,
b. Consider operational costs and water quality standards when determining treatment options, and
c. Consider aesthetic characteristics such as taste, odor and residual chlorine in the design process of treatment options.

Policy B 3.2 The City shall maintain monitoring schedules which provide:

a. Monitoring at each facility, both on-site and remotely, if applicable,
b. Sampling schedules designed to monitor as early in the compliance cycle as possible,
c. Sampling appropriately within the distribution system,
d. Sampling results shared with residents in a timely fashion, and
e. Compliance with Federal, State and Local regulations for each parameter of interest tested.

Policy B 3.3 The City shall maintain a compliance laboratory for both operational and compliance purposes, which provides rapid response to operations for routine testing where:

a. Parameters that are tested shall minimize turn-a-round time,
b. Parameters that are tested shall improve operational efficiency and effectiveness,
c. Parameters that are tested will be cost effective for regulatory compliance,
d. Verification of testing completed and each result will be in compliance with Federal, State and Local regulations,
e. Water quality sampling data shall be managed using a computerized database management system to facilitate tracking, trending and archival of the information, and archival of the information.
f. All laboratories used by the City shall be certified by the Arizona Department of Environmental Quality (ADEQ) for the parameters that are tested.

Policy B 3.4 The City shall maintain a cross connection program which requires all backflow devices within the City, except single family homes unless equipped with a fire sprinkler system, to be tested annually and in compliance with Federal, State and local regulations. All testing and permitting costs will be the responsibility of the owner.

**Wastewater**

Policy B 3.5 The City shall maintain a pretreatment program which adheres to U.S. Environmental Protection Agency (USEPA) requirements. This program shall perform the following at a minimum:

a. Maintain an annual inspection, monitoring and sample schedule which protects the City's infrastructure,
b. Ensure businesses do not discharge wastes which can lead to sanitary sewer overflows, and

c. Ensure businesses do not discharge waste which can compromise the collection infrastructure, treatment facility, impair operators or cause reclaimed water to fail to meet permit requirements.

Policy B 3.6 The City shall develop wastewater treatment facilities which:

a. Adhere to Aquifer Protection and Arizona Pollutant Discharge Elimination System permits issued by the ADEQ,
b. Provide the best use of reclaimed water while ensuring compliance to the facility's regulatory permit(s),
c. Allow the greatest flexibility in plant operations,
d. Minimize operational costs, and
e. Provide reclaimed water at a minimum quality of A+.

Policy B 3.7 The City shall develop appropriate emergency response plans that:

a. Coordinate with multiple agencies to facilitate communication and minimize challenges in the event of an emergency,
b. Develop cooperative agreements with surrounding organizations or communities, if appropriate, and
~~c.~~ Review facility emergency operations plans on an annual basis to ensure appropriate response~~.~~

## B4 Water Reclamation – Reclaimed Water

The State of Arizona is recognized as a national leader in the management and regulation of reclaimed water which has led to its increased use across the State. The Governor's Blue Ribbon Panel Report on Water Sustainability states that reclaimed water has significantly increased in use over the past two decades and now represents 3% of the total water used throughout the State in 2012. During this same time period, the City of Flagstaff has been known within Arizona as a leader in reclaimed water use and it now represents 20% of total water used within the City. The treatment, delivery and use of reclaimed water will continue to play a significant role in the sustainability of our community today and into the future.

Definitions

i. Direct Reuse: in accordance with Arizona Administrative Code (A.A.C.) R18-9-701, Direct reuse means the beneficial use of reclaimed water for a purpose allowed by state law. The delivery of this water supply is accomplished via a separate distribution system, commonly colored purple. The uses of Class A+ reclaimed water that are common to Flagstaff and are listed in A.A.C. R18-11-309-Table A include: residential or school ground landscape irrigation,

irrigation of food crops, toilet and urinal flushing, fire protection systems, snowmaking, golf course irrigation, dust control, and street cleaning. Direct reuse does not include water for potable consumption.

ii. Groundwater Recharge: in accordance with Arizona Revised Statutes groundwater recharge is conducted utilizing either a Constructed (§45-802.01.4) or a Managed (§45-802.01.12) Underground Storage Facility (USF) that has the intent to storing water underground. In general, a Constructed USF is an engineered and designed recharge facility while a Managed USF simply utilizes the natural channel of a stream (e.g., Rio de Flag) to recharge the groundwater aquifer.

iii. Indirect Reuse: in accordance with industry standards and for the purposes of this policy, Indirect Reuse means the use of reclaimed water that has been previously recharged and stored underground; that has been co-mingled or mixed with the natural groundwater system; then withdrawn or recovered via water supply wells. This co-mingled mix of water meets all Safe Drinking Water Act requirements.

iv. Reclaimed Water: in accordance with A.A.C. R18-9-701, Reclaimed water means water that has been treated or processed by a wastewater treatment plant or an on-site wastewater treatment facility.

v. Recovery: in accordance with Arizona Revised Statutes, recovery of stored water is the withdrawal of a water supply (e.g., reclaimed water) that has been previously recharged underground pursuant to applicable state law (§45-831.01 - §45-836.01).

Policy B 4.1 The Utilities Division should remain engaged in regional, state and national discussions on the use and regulation of reclaimed water regarding the management and quality of the water supply and the state of the science of treatment technologies. This should be accomplished by remaining active at a minimum in the national WateReuse Association and its Arizona chapter (WateReuse Arizona), Water Environment Federation and the national American Water Works Association and its Arizona section (AZ Water).

Policy B 4.2 The Utilities Division should design and construct water reclamation facilities that treat and produce reclaimed water to the highest water quality standards permitted by Federal and State law. Additionally, the Utilities Division should evaluate the economic costs and environmental and health-risk benefits of implementing additional treatment alternatives that are beyond existing laws.

Policy B 4.3 The Utilities Division should continue to recommend updates to policies and ordinances that encourage the Direct Reuse of reclaimed water where appropriate and consistent with State and Federal laws.

Policy B 4.4 The Utilities Division should develop a Groundwater Recharge & Recovery program that is in compliance with applicable state laws (§Title 45 Chapter 3.1 Underground Water Storage and Replenishment). The purpose of this program would be to optimize the management and use of the City's unused reclaimed water.

Policy B 4.5 The Utilities Division should maintain an educational program that focuses on reclaimed water, its safety, quality, public perception and beneficial uses.

Policy B 4.6 Reclaimed Water System Capacity Allocation Program: The Utilities Division shall track and monitor existing and proposed peak day and average annual reclaimed water deliveries in order to prevent exceeding the City's ability to provide reliable service. When system capacity has been approached, the Utilities Director will stop issuing any new Reclaimed Water Agreements until such time that additional reclaimed water capacity is available.

Policy B 4.7 The Utilities Division should require each user to have a direct delivered Reclaimed Water Agreement. These Agreements should contain at a minimum; customer name, address, place of use, point of delivery, delivery schedule (i.e., maximum peak day, maximum monthly and annual volume), commodity rate, termination date and other applicable information as appropriate. If reclaimed water is is over allocated then we will deny additional customers.

Policy B 4.8 Golf courses and amenity lakes shall use Direct Reuse of reclaimed water.

Policy B 4.9 In conjunction with Policy A.3.4 within Section Rate Design Elements: Water–Sewer–Reclaimed Water; Reclaimed water rates should be set on a cost-of-service basis. To the extent these rates do not provide adequate price incentive, the price of reclaimed water shall be based on a value which encourages its use and will be subsidized by the water rate customers.

Policy B 4.10 The priority uses or future allocations of reclaimed water are:

Water Conservation. Conserve potable water through the Direct Reuse of reclaimed water by converting existing uses of potable water to reclaimed water, where appropriate.

Public Benefit. The Direct or Indirect Reuse of reclaimed water should be encouraged to sustain or promote economic vitality, augment the City's water supply (e.g., Groundwater Recharge and Recovery) and sustain riparian habitat, wetlands or ponds.

Examples of such Direct and Indirect Reuse of reclaimed water in no specific order of priority:

Uses of reclaimed water that are identified and approved by the ADEQ (i.e., AAC R18-11-309. Table A).

Riparian habitat, wetlands & ponds: Use of reclaimed water to support areas of vegetation that is dependent on saturated or moist soils along the banks of the Rio de Flag which is distinct from the predominant or typical landscape type.

Amenity Lakes or Ponds: Direct Reuse of reclaimed water to fill and maintain amenity or decorative lakes that have public access.

Landscaping: Irrigation of turf and other types of landscaping associated with public parks, cemeteries, schools, ball fields, golf courses.

Construction/Street cleaning: Use of reclaimed water for dust control or street sweeping on construction projects or City streets whether by private company, federal, state DOT or municipal use. This can be either through approved hydrant use or hauled water.

Commercial, Industrial and Manufacturing: Any commercial, industrial or manufacturing operation that uses reclaimed water for its processes.

Managed or Constructed Underground Storage (or recharge) Facilities: Storing reclaimed water underground for future use within permitted groundwater recharge facilities that are located within or adjacent to the Rio de Flag.

Recovery: Use of a City water supply well to withdraw or recover a mixed, co-mingled source of reclaimed water with groundwater. that has been previously stored underground pursuant to applicable state law.

## B5 Recharge and Recovery

In order to ensure groundwater supplies are sustainable and resilient to the impacts from prolonged drought, the City should be involved in the recharge of its unused renewable water supplies. In addition, the City should plan and implement strategies to recover those renewable water supplies that are stored underground to meet its customers long-term water needs.

Policy B 5.1 The City should continue to develop local water recharge and recovery initiatives. These initiatives:

a. Maximize the storage of the City's unused reclaimed water underground (recharge) by developing, constructing and permitting City-owned Underground Storage Facilities, where appropriate, through the Arizona Department of Water Resources.
b. Capture and recover the stored reclaimed water through water supply wells located down-gradient and permitted as Recovery Wells through the Arizona Department of Water Resources.

Policy B 5.2 The City should remain engaged, informed and involved in state-wide and regional discussions regarding groundwater use, recharge and recovery.

## C. Water Conservation

The City of Flagstaff Water Conservation program provides customers with an educated awareness of water as a valuable resource. This program enables water use efficiency and less demand on our water supply resulting in reduced capital and operating costs for water production and wastewater treatment. Conservation also results in reduced energy needs for water production by reducing the amount of energy required to deliver water to our customers. A comprehensive and consistent water conservation and usage policy shall be developed that would include the best use of all the City's water resources while assuming a leadership role for Water Conservation in the community.

### C1 Education

Policy C 1.1 The Water Conservation Section shall maintain a year-round water conservation program that provides outreach to its citizens. Program administrators shall participate and provide educational information at various events in the community and provide updates through the City of Flagstaff's website and other appropriate venues. The program shall promote Xeriscape and not "zeroscape" in landscape design.

### C2 Water Use Restrictions and Regulatory Compliance

Policy C 2.1 the water conservation section develops and maintains an ordinance that shall require less water consumption per capita yet enables the consumer to maintain an aesthetically attractive, comfortable and clean environment.

Strategy C2.1a The Water Conservation Section shall also partner with the Community Development Division and the Utilities Stormwater Section to ensure compliance with the codes these programs enforce. The Water Conservation program shall collaborate with these programs to develop additional strategies or programs to achieve future reduction in per capita water use.

Strategy C2.1b The Water Conservation Section shall develop and maintain Strategy Levels in the ordinance that defines the severity of each water shortage level and required cutbacks with pre-defined criteria regarding when each level goes into effect.

Strategy C2.1c The Water Conservation program shall track water demand and consumption. This information shall be updated on a regular basis to be used in a variety of reports.

## C3 Incentive Programs

Policy C3.1 The Water Conservation Section should consider and develop a rebate program in the form of monetary credit on a customer's water bill in order to encourage the further conservation of the City's water supplies.

Strategy C3.1a The criteria used to determine program products for rebates shall include at a minimum the water savings compared to the cost of implementing a specific water savings device (e.g. $/gallons of water saved per unit device).

Strategy C3.1b Metrics related to the water conservation rebate program shall be calculated to determine effectiveness of such programs and assist in developing future program parameters. Devices that created the greatest water savings will be used in future rebate programs. Ineffective devices will be replaced with ones that yield better water savings.

## C4 Regional Participation

Policy C4.1 The City of Flagstaff should participate in local and state-wide groups that promote water conservation.

Strategy C4.1a The City of Flagstaff shall partner with the appropriate local events that include water conservation.

Strategy C4.1b The City of Flagstaff shall attend informational meetings. That includes, but is not limited to, Arizona Department of Water Resources, InfoShare, and ReNEWS.

## C5 Rainwater Harvesting

Policy C5.1 The Water Conservation program shall work closely with the Stormwater Section to insure the same goals of conserving water are addressed in each program and are supportive of each other.

## C6 Support of Riparian Areas

Policy C6.1 The Water Conservation program should establish criteria on how unused reclaimed water will be used for the benefit of the environment and support of riparian needs into the future.

## C7 Drought Planning

The City's renewable water supplies are often impacted by short-term changes in local precipitation and would be severely impacted by any long-term changes in regional climate. The City will maintain a Drought Contingency Plan within its Water Conservation ordinance in order to establish policies, rules and penalties to be implemented when a water deficiency condition has been declared.

Policy C 7.1 The City shall maintain a Drought Contingency Plan and it should:

a. Coincide with the Water Resources Master Plan,
b. Establish strategies and their goals, develop triggers for when each strategy shall be implemented,
c. Provide for authority and enforcement,
d. Communicate the difference between water conservation as a lifestyle and demand reduction as a drought response, and
e. Contain clear procedures on how the plan will be implemented, including provisions for informing the public.

Policy C 7.2 The Drought Contingency Plan goals should be:

a. To protect public health and safety,
b. Aid in community-wide economic security,
c. Provide sufficient water to meet the needs of the City of Flagstaff water customers,
d. Allocate the impacts and hardships caused by drought equitably,
e. Minimize the disruption to the economy so that jobs are protected and regional economic stability is preserved, and
f. Provide options for updating or amending the Drought Plan by the City Council.

Policy C 7.3 The Drought Contingency Plan should define and establish triggers and water use restriction strategies.

a. Consider defining multiple levels of water use restriction stages and strategies to reduce water consumption.
b. Consider defining triggers based upon infrastructure limitations.
c. Consider defining triggers based upon hydrologic supply limitations.

## D. Stormwater

The responsibilities of the Utility's Stormwater Section are categorized into stormwater quantity (flood control), stormwater quality, and watershed management. Some activities, such as Low Impact Development (LID), which captures stormwater for reuse and infiltration, address both water quality and quantity.

In general, the Stormwater Section's activities include a variety of mandated compliance programs including the FEMA Flood Insurance Program and the EPA mandated National Pollutant Discharge Elimination System (NPDES). The Section also manages Master Planning efforts, enforces stormwater design standards, and responds to drainage complaints received from citizens. The Section delivers a capital improvement program for drainage infrastructure improvements as well as managing a drainage maintenance program.

### D1 Compliance

Policy D1.1 The City shall make necessary and timely changes to ensure full compliance with Federal Emergency Management Association (FEMA) floodplain regulations, and ,the National Pollution Discharge Elimination System (NPDES) regulations administered by both the U.S. Environmental Protection Agency (USEPA) and the Arizona Department of Environmental Quality (ADEQ).

Policy D1.2 The City will maintain contact with FEMA, USEPA, and ADEQ to remain up-to-date on pending and adopted regulatory changes, ensure that changes to City policies and ordinances necessary to remain in compliance are adopted and implemented, and provide necessary training and public outreach to customers to assist with compliance.

### D2 Flood Control

Policy D2.1 The City will continually strive to improve the ranking in the Community Rating System (CRS) in order to provide discounted flood insurance for the community.

Policy D2.2 The City will continually strive to improve the accuracy of Flood Insurance Rate Maps

Policy D2.3 The City will partner with the Emergency Operations Centerr (EOC), Streets and other emergency responders to develop detailed policies and procedures for local and regional flood response scenarios.

Policy D2.4 By working with the Streets Section, ensure proper inventory of the drainage infrastructure and provide necessary funding for future years based on system growth and need.

## D3 Stormwater

Policy D3.1 The City shall conduct drainage master planning for all major (regulatory) watercourses in the City, adopt development standards that adhere to the results of the Master Plans, and explore funding sources for the construction of prioritized master plan projects.

Strategy D3.1a All public and private drainage infrastructure proposed to be constructed on watercourses included in the completed Master Plan should be constructed according to the results and recommendations within the Master Plan.

Strategy D3.2b The City shall work with the US Army Corps of Engineers to secure funding for completion of the project that addresses including but not limited to the upper Rio De Flag and Clay Avenue watercourses.

Policy D3.2 The City's Stormwater Management Design Manual shall contain current design and inspection requirements for private development drainages.

Policy D3.3 The City shall respond to drainage complaints within 24 hours of receipt and provide timely resolution.

Policy D3.4 The City's shall provide appropriate credits for the stormwater quantity and quality improvements outlined and periodically updated in the Stormwater Credit Manual.

Policy D3.5 The City shall promote the direct use of stormwater as a water conservation tool and develop best management practices to capture and use stormwater in a variety of ways for a variety of uses.

Policy D3.6 Drainage improvements should be designed to promote infiltration, when practical. The use of concrete and closed conduits shall be discouraged.

Policy D3.7 The City shall develop and maintain a capital drainage improvement program (DRIP) and work cooperatively with the Streets Division to complete small-scale drain improvements.

Policy D3.8 The City shall continually seek to evaluate the feasibility of alternative, less costly approaches to stormwater management. Such approaches may include exploring

Green Streets as a solution for drainage problems, creating LID demonstrations or pilot projects as part of any City funded projects, and developing incentives for LID demonstrations and pilot projects on private developments.

**D4 Watershed Management**

Policy D4.1 To protect the City's water supply and quality, the City will actively seek to encourage implementation of watershed restoration projects both within City boundaries and on lands owned or managed by private and public entities.

Strategy D4.1a The City shall partner with the "Stream Team," whose mission is to identify opportunities for restoration maintenance and preservation of streams, washes, and open channels within City limits, and work with neighborhoods, community representatives and other jurisdictions to ensure successful implementation of watershed restoration projects.

Strategy D4.1b The City will partner with a variety of private and public entities to support the implementation and maintenance of watershed restoration programs on parcels beyond the city limits that have a benefit to the City.

## E. Infrastructure

### E1 Water System Capacity Redundancy

Surface water supplies can be subject to interruptions and reduced or unavailable supply for a variety of reasons including drought, water quality, or infrastructure failure. Groundwater supplies can also be subject to interruptions for several reasons, including water quality and infrastructure failure. Therefore, having redundant (back-up) water supply sources and the necessary infrastructure to deliver that supply is good business practice. The purpose of requiring redundancy in our infrastructure is to ensure reliable water delivery to municipal customers in the event of a disruption of the City's primary water supply.

Policy E1.1 The City should develop system infrastructure as follows:

Strategy E1.1a The water system must be designed to provide an uninterrupted supply of water during peak hourly demand with a minimum supply pressure of 40 pounds per square inch (psi) at the supply point for Maximum Probable Development (MPD) and for an economical life of not less than 50 years;

Strategy E1.1b The public water supply system must be designed for the MPD of the entire subdivision and any undeveloped land beyond and in accordance with the land development code.

Policy E1.2 The City should maintain a diversified water resource portfolio in order to maintain an adequate redundant water supply by:

Strategy E1.2a Maximizing the use of reclaimed water on areas that are appropriate within the City. This may include direct delivery of reclaimed water or recharge of our underground aquifers.

Strategy E1.2b Constructing the necessary infrastructure for the transmission of treated water between various water supply sources.

Policy E1.3 The City should maintain sufficient water storage in order to maintain an adequate redundant water supply by considering the following:

Strategy E1.3a The basic objectives of water storage facilities are to help meet peak flow requirements, to equalize system pressures, and to provide emergency water supply, such as fire flow requirements.

Strategy E1.3b Water storage capacity shall be met by use of ground or subsurface mounted types of storage tank facilities installed at an elevation above the upper zone boundary elevation of that portion of the distribution system it serves. Elevated water storage can also be referred to as gravity storage tanks or

reservoirs. Elevated pedestal mounted water storage tanks shall not be used.

Policy E1.4 The City should maintain a water pipeline redundancy in order to maintain an adequate redundant water supply by considering the following:

Strategy E1.4a Redundancy in the water distribution system is one way that the City can ensure reliability in delivering water to both residential and commercial customers.

Strategy E1.4b Consider adding redundancy within the distribution system when replacing facilities that have reached the end of economic lives or when performing repairs on existing facilities that require wholesale customer outages and the costs of redundancy are less than the avoided risk costs.

Strategy E1.4c Redundant distribution water mains may be required to parallel transmission mains in order to meet water demands during a transmission main outage.

## E2 Water System Capacity Allocation

This policy relates to how the City of Flagstaff will plan and allocate the water system capacity available for new development. The primary purpose is to avoid exceeding the flow capacity of pipeline infrastructure and water production and treatment capacity. The benefit to the community is to ensure the public's trust in the City's water system and provide for long-term planning tool for community sustainability. This policy relates strictly to the tracking and commitment of the City's "paper water" peak day demands and is allocated on a "first in time, first in right" principle. Infrastructure requirements are addressed in Policy F1 – Utilities Master Planning.

Policy E2.1 It is the intent of the Utilities Division to provide adequate water system capacity to meet the City's future development needs. In order to timely provide these services it will be Division policy to plan for future infrastructure, water production and treatment capacity needs by adopting the following benchmarks:

Strategy E2.1a At 80% of committed peak day demand – the Utilities Division will identify additional sources, treatment capacity needs, funding options, start design and necessary land acquisition for increased capacity needs.

Strategy E2.1b At 85% of committed peak demand - the Utilities Division will begin construction to expand necessary facilities.

Strategy E2.1c At 95% of committed peak demand – the Utilities Division will have completed construction and all necessary regulatory

agency permits will have been obtained and begin full operation.

Policy E2.2 Communication: The Utilities Division will provide the primary point of contact for all staff-level communication with both the Arizona Department of Environmental Quality and the USEPA on water quality related issues.

Policy E.2.3 Water Capacity Allocation Program: The Utilities Division shall track and monitor existing and proposed water demands to prevent the pipeline and treatment plants from exceeding the permitted design flow capacity and prevent outages or curtailments from occurring. Flows shall be based on the applicant's water build-out flow basis not actual flows. Any differential between actual flows and the development's build-out water flow basis that occurs is not available to the applicant for re-allotment to another project or project expansion.

Strategy E2.3a The Utilities Division shall conduct hydraulic modeling studies, (known as a Water–Sewer Impact Analysis) necessary to estimate water infrastructure impacts considering existing and proposed demands per City Engineering standards. These studies shall be reviewed and updated on a regular basis as more technical information becomes available.

Strategy E2.3b The Utilities Division will use water demand data submitted during the Inter Departmental Staff Review Board process to estimate the Developer's water demand needs at build out.

Strategy E2.3c The Utilities Division will commit, track and set aside with different time periods the necessary water system capacity (peak day water flow) for all new Subdivision Final Plats and new projects developed in accordance with their existing zoning designation on the Zoning Map. Annual peak day water capacity requirements for Major Regional Plan Amendments shall also be tracked but not committed or set aside.

Strategy E2.3d The developer will be required to obtain a building or grading permit within the specified timeframes outlined below or risk losing the committed water system capacity:

- Subdivision Final Plat – there will no time limit on the reservation of the water system capacity committed for the development
- Zoning Map Amendment and Minor Amendments to the Regional Plan – for such new development, water resources will only be committed for no longer than the time frame associated with the zone change approval within which the applicant has to commence construction (typically 2 years)

- Major Amendments of the Regional Plan – there will be no reservation of committed water system capacity for these amendments

Strategy E2.3e Developments that require water system capacity infrastructure which are not included within with Utilities Division 10-year Capital Improvement Plan or those that create water system capacity requirements beyond what the existing water system can provide shall be treated on a case by case basis. After a Water-Sewer Impact Analysis is conducted, the Utilities Division may require the developer to drill a well or multiple wells necessary to meet the developments "average daily" capacity requirements. The Utilities Division should develop criteria for when a well or multiple wells will be required to be funded separately by the Developer. The Utilities Division will be responsible to provide the difference between the development's "average day" and "peak day" water system capacity requirements.

Strategy E2.3f Developments that require water storage capacity infrastructure which are not included in the current 10 year Capital Improvement Plan or those that create water storage requirements beyond what the existing water storage facilities shall be treated on a case by case basis. In order to meet regulatory requirements for water storage, the Utilities Division may require the developer to fund and construct storage tank(s) equal to their "average day" water demands. The Utilities Division should develop criteria for when a storage tank(s) will be required to be funded separately by the Developer. The water storage tanks must be placed at an elevation that will provide adequate pressure for the Zone. It is the developer's responsibility to obtain the appropriate land and right-of-way required to place the tank(s) and convey the water from the tank(s) to the site.

## E3 Sewer System Capacity Allocation

This policy relates to how the City of Flagstaff will plan and allocate the sewer system capacity available for new development. The primary purpose is to avoid exceeding the flow capacity of pipeline infrastructure and wastewater plant treatment capacity. The benefit to the community is to ensure the public's trust in the City's sewer system, avoiding public health hazards and provide for long-term planning tool for community sustainability. This policy relates strictly to the tracking and commitment of the City's "paper sewer" demands and does not address the future infrastructure requirements needed to support build out. Infrastructure requirements are addressed in Policy F.1 – Utilities Master Planning.

Policy E3.1 It is the intent of the Utilities Division to provide adequate sewer capacities to meet the City's future development needs. In order to timely provide these services it will be department policy to plan for future infrastructure and treatment capacity needs by adopting the following benchmarks:

Stragegy E3.1a At 75% of actual flow capacity - the Utilities Division will identify additional treatment capacity and funding options.

Strategy E3.1b At 80% of actual flow capacity – the Utilities Division will begin design and necessary land acquisition for increased capacity needs.

Strategy E3.1c At 85% of actual flow capacity – the Utilities Division will begin construction of expanded facilities.

Strategy E3.1d At 95% of actual flow capacity – the Utilities Division will have completed construction and all necessary regulatory agency permits will have been obtained and begin full operation.

Policy E.3.2 Communication: The Utilities Division will provide the primary point of contact for all staff-level communication with both the ADEQ and the USEPA on sewer discharge regulatory related issues.

Policy E.3.3 Sewer Capacity Allocation Program: The Utilities shall track and monitor existing and proposed sewer flows to prevent the pipeline and treatment plants from exceeding the permitted design flow capacity and prevent sanitary sewer overflows from occurring. Sewer Capacity Assurance tracking shall be in accordance with Arizona Administrative Code (AAC) R18-9-E301(C)(2) and in compliance with the ADEQ guidelines on an ongoing basis.

Strategy E3.2a The Utilities Division shall conduct hydraulic modeling studies necessary to estimate sewer infrastructure impacts considering existing and proposed demands per City Engineering standards. These studies shall be reviewed and updated on a regular basis as more technical information becomes available.

Strategy E3.2b The Utilities Division will use sewer demand data submitted during the Interdivisional Development Review Board process to estimate the Developer's sewer demand needs at build-out.

Strategy E3.2c The Utilities Division will commit, track and set aside with different time periods the necessary sewer system capacity (average daily design flow at build-out) for all new Subdivision Final Plats and existing zoning grading plans that are approved by the City Council. Annual average daily sewer

capacity requirements for Major amendments shall also be tracked but not committed or set aside. The projected average daily sewer flow shall be calculated using the City of Flagstaff Engineering Standards and/or the sewer unit design flow tables contained within the Arizona Administrative Code (AAC) R18-9-E301 Table 1.

Strategy E3.2d The developer will be required to obtain a building or grading permit within the specified timeframes outlined below in accordance with the conditions of the Zoning Map Amendment approval or risk losing the committed sewer system capacity:

- Subdivision Final Plat – there will no time limit on the reservation of the water system capacity committed for the development
- Zoning Map Amendment and Minor Amendments to the Regional Plan – the reservation of a committed water supply for the approved conditions of the amendments will be no longer than a 2-year timeframe in accordance with Division 10-20.50 of the Zoning Code
- Major/Minor Amendments of the Regional Plan – there will be no reservation of committed water system capacity for these amendments

Strategy E3.2e Developments that require sewer system capacity infrastructure which are not included within with Utilities Division 10-year Capital Improvement Plan or those that create sewer system capacity requirements beyond what the existing sewer system can provide will be treated on a case by case basis. After a Water-Sewer Impact Analysis is conducted, the Utilities Division may require the developer to upsize sewer infrastructure off-site to meet the developments "average daily" capacity requirements. The Utilities Division should develop criteria for when upsizing will be required to be funded separately by the Developer.

Strategy E3.2f Each new development, Zoning Map Amendment or a Major/Minor amendment to the Regional Plan will submit to the City an estimate of the maximum number of units (both residential and non-residential) and the average daily sewer design flow their development will require at built-out.

Strategy B3.2g The Community Development, Economic Vitality and Utilities Divisions will coordinate regarding the City's available uncommitted sewer capacity that can be allocated to priority developments shown in the voter approved Regional Plan. This will occur before approving any new extension, variance, or other changes to any final site or construction plans that

results in the allocation of sewer capacity beyond that what was originally approved.

Policy E.3.3 Compliance: The City shall maintain its Designation as an Arizona Pollutant Discharge Elimination System Site and the permitted discharge limits as determined by the ADEQ. Additionally, City of Flagstaff will submit these committed demands to ADEQ for any new subdivision, site, system extension or collection system expansion as currently required by law.

## E4 Service Outside City Limits

The City of Flagstaff provides water and sewer service to some areas outside its City corporate limits. These areas include unincorporated areas of Coconino County such as portions of Doney Park, Camp Townsend, Pine Del, Ft. Tuthill and county islands within Flagstaff corporate limits. The purpose of this policy is to describe the conditions, requirements, and procedures for obtaining City of Flagstaff water and sewer service connections to areas located outside the corporate limits of the City of Flagstaff.

Policy E 4.1 The City will consider out of city requests for service from customers in Unincorporated County Areas that are located within or contiguous to the City of Flagstaff corporate limits using the following criteria:

Strategy E4.1a The Unincorporated County Areas shall agree to be annexed into the City of Flagstaff.

Strategy E4.1b The property requesting annexation must be within or contiguous to the City of Flagstaff corporate boundary.

Strategy E4.1c Water or Sewer main extensions will be permitted only after annexation of the property is completed and approved by the Flagstaff City Council.

Strategy E4.1d Requests for service shall be evaluated by a cross-divisional internal team. The City will consider the economic value, potential costs to existing ratepayers, operation and maintenance costs, impacts to water resources, adequateness of infrastructure, and regional land use plans prior to granting service requests.

Strategy E4.1e Requests for service within other jurisdictions that are not described above will require an Intergovernmental Agreement (IGA) between the City and the other jurisdiction.

Policy E 4.2 The City's general policy for providing retail water service to outside City customers will depend on the property's location and the City's obligation for providing water service and consider the following:

Strategy E4.2a The City will allow a water service connection if a property fronts an operating water main that is less than 16-inches in diameter, (mains 16-inches and larger are transmission mains that are not intended for tapping), there is sufficient capacity in the system to meet peak hour fire flows, and all City Code and Engineering Design Standards associated with obtaining water service are met.

Strategy E4.2b All service connections and main extensions shall comply with all applicable standards and code requirements, including, but not limited to, Flagstaff City Code, City of Flagstaff Engineering Design Standards, International Fire Code, and Maricopa Association of Governments (MAG) Standards.

Strategy E4.2c Service connections and main extensions shall be located in public right-of-way meeting the standards of the City of Flagstaff. An easement, license or non-revocable permit is required for main extensions in the public right-of-way. If the service connection or main extension cannot be installed in right-of-way, a dedicated easement meeting City of Flagstaff design requirements will need to be approved by the City of Flagstaff Utilities Department.

Strategy E4.2d The City will provide service through a water service connection if a property fronts an operating City water distribution main, the main is within the correct pressure zone, there is sufficient capacity in the water system, and all City Code and COF Engineering Design Standards associated with obtaining water services are met.

Strategy E4.2e Applicants shall be required to pay all applicable outside City of Flagstaff development fees, capacity fees, connection fees, repayment agreement fees, and permit fees.

Strategy E4.2f The property to be served shall meet the same development water standards required of properties within the City of Flagstaff limits that seek water service.

Strategy E4.2g The City has the authority to deny or discontinue service if the service connection could threaten or endanger the safe, efficient and adequate service.

Strategy E4.2h The current outside City water service areas are shown and updated in the Water System Master Plan.

Policy E 4.3 The City's general policy for providing retail sewer service to outside City customers will depend on the property's location and the City's obligation for providing sewer service and considering the following:

Strategy E4.3a The City will allow a sewer service connection if a property fronts an operating sewer main that is less than 18-inches in diameter, (mains 18-inches and larger are interceptor sewers that are not intended for tapping), there is sufficient capacity in the system to meet peak hour wastewater flows, and all City Code and Engineering Design Standards associated with obtaining sewer service are met.

Strategy E4.3b Under no circumstances will services be allowed into existing manholes.

Strategy E4.3c Sewer service within other jurisdictions that are not described above will require an Intergovernmental Agreement (IGA) between the City and the other jurisdiction.

Strategy E4.3d All service connections and main extensions shall comply with all applicable standards and code requirements, including, but not limited to, Flagstaff City Code, City of Flagstaff Engineering Design Standards, International Building Code, and Maricopa Association of Governments (MAG) Standards.

Strategy E4.3e Service connections and main extensions shall be located in public right-of-way meeting the standards of the City of Flagstaff. An easement, license or non-revocable permit is required for main extensions in the public right-of-way. If the service connection or main extension cannot be installed in right-of-way, a dedicated easement meeting City of Flagstaff design requirements will need to be approved by the City of Flagstaff Utilities Department.

Strategy E4.3f Applicants shall be required to pay all applicable outside City of Flagstaff development fees, capacity fees, connection fees, repayment agreement fees, and permit fees.

Strategy E4.3g The property to be served shall meet the same development sewer standards required of properties within the City of Flagstaff limits that seek sewer service.

Strategy E4.3h The City has the authority to deny or discontinue service if the service connection could threaten or endanger the safe, efficient and adequate service.

Strategy E4.3i The current outside City sewer service areas are shown and updated in the Wastewater System Master Plan.

Policy E 4.4 The Utilities Division will review requests for water, sewer and reclaimed main extensions using the following criteria:

Strategy E4.4a Determine if capacity is available and stipulate any necessary requirements for the extensions. Any new service or change in use that will result in increased demands for water must consider that the change may require additional improvements to the City's water, sewer and reclaimed water systems at the owner's/developer's expense.

Strategy E4.4b Sewer main extensions will be permitted only after annexation is completed and approved by the Flagstaff City Council. The property requesting annexation must be contiguous to the City of Flagstaff corporate boundary.

Strategy E4.4c Deviation from this policy will require City Council approval.

Strategy E4.4d Utility line extensions may require a Water and Sewer Impact Analysis (WSIA). Requirements for water and sewer extensions shall be outlined within the WSIA analysis. Payment for the WSIA shall be by the developer or applicant.

**E5 Service Area Expansion (reserved for the future)**

**E6 Service Area Expansion- annexation (reserved for the future)**

# F. Master Planning

## F1 Utilities Master Planning

The City has developed and maintained water, wastewater and reclaimed water treatment and distribution/collection systems in order to provide a high level of water services to its citizens and customers. These systems should conform and support the orderly growth identified in the Regional Plan (i.e., General Plan), employ sound water management principles, meet or exceed all federal and state water quality requirements, provide for adequate fire suppression and stormwater drainage for the benefit of public health and safety.

The City should first undertake a water resource master planning effort. The purpose of this planning should be to provide a guide to quantify the long-term needs for water resources, and identify future supply options and/or demand management opportunities including their respective costs. Additionally, this plan should support the City in maintaining its 100-year Designation of Adequate Water Supply as confirmed by the Arizona Department of Water Resources and within Policy B2 – Water Adequacy.

The City should then undertake infrastructure related master planning efforts in successive steps that utilize the information from each preceding planning effort to build upon one another. The sequence of planning should be completing the water infrastructure system, followed by the wastewater infrastructure system and then the reclaimed water infrastructure system. The purpose of conducting these planning efforts in sequence is to utilize common data between them to ensure continuity and integration of each of the systems. The last master planning effort in the sequence that spans across all three (3) of the infrastructure plans is to evaluate the Utilities implementation of technology, specifically its process control and monitoring system know as a Supervisory Control and Data Acquisition (SCADA) system.

Policy F 1.1 The City will prepare or update a Water Resource Master Plan every five (5) years that considers the following:

Strategy F1.1a Existing legal water rights to the supplies it currently uses or possesses.

Strategy F1.1b Projected population and land use information contained within the voter approved Regional Plan in order to estimate water demands for a minimum of 30 years into the future (i.e., short-term planning) and at build-out (i.e., long–term planning). The maximum target population density of the Regional Plan should be used for water demand estimates unless determined otherwise.

Strategy F1.1c The technique of Scenario Planning or its equivalent should be employed when estimating future water supply needs of the City. The planning should anticipate a range of future plausible outcomes (e.g., wet v. dry climate; fast v. slow growth rates) and describe recommendations and choices the City can make in the short and long term. The planning should avoid predicting a single plausible future and then recommend water management options for only that sole outcome.

Strategy F1.1d Identification of the types and volumes of hydrologic water supplies (i.e., surface water v. groundwater) in order to assist in determining the necessary infrastructure (e.g., treatment plants or wells) during the Infrastructure master planning effort.

Strategy F1.1e Develop average annual water use factors for each type of land use (e.g., single family, multi-family, hotel, commercial, industrial, etc). Water use factors should be quantified in terms of Gallons per Capita per Day (GPCD), Gallons per House per Day (GPHD) or Gallons per Acre per Day (GPAD), as appropriate.

Strategy F1.1f Identify future water supply options and recommendations while considering the City's Adequate Water Supply Designation.

Strategy F1.1g This section should include options on how the City can better manage or optimize the supplies it currently relies upon (e.g., water conservation, rainwater harvesting, etc.) in addition to identifying new future water resources, as appropriate. All options should include their estimated cost on an acre-foot per year basis for comparison purposes.

Policy F 1.2 The City will prepare a Water System Master Plan every five (5) years beginning the following year after the completion of the Water Resources Master Plan that considers the following:

Strategy F1.2a Use all of the information and assumptions contained within the Water Resources Master Plan

Strategy F1.2b Identifying the necessary infrastructure (e.g., treatment plants and/or wells) to treat and deliver the water supplies identified within the Water Resources Master Plan in order to meet projected water demands. The regulatory requirements of the USEPA, ADEQ and any other applicable water quality rules or regulations.

Strategy F1.2c Development of average and peak water demand factors.

Strategy F1.2d Development and calibration of a hydraulic model of the water distribution system in order to assist in evaluating the optimum operations, water quality and infrastructure sizing. Update this model annually to account for changes in the Regional plan and/or changes in development patterns.

Strategy F1.2e Development of a Capital Improvement Program, including capital, operation and maintenance costs, in order to develop and maintain a robust water distribution system to provide a high level of water service to Flagstaff customers.

Policy F 1.3 The City will prepare a Wastewater System Master Plan every five (5) years that considers the following:

Strategy F1.3a Use all of the appropriate information and assumptions contained within the Water Resources and Water System Master Plans

Strategy F1.3b Identifying the regulatory requirements of the USEPA, ADEQ and any other applicable water quality rules or regulations.

Strategy F1.3c Average and Peak wastewater flow.

Strategy F1.3d Development and calibration of a hydraulic model of the wastewater collection system in order to assist in evaluating the adequacy of the existing system to accommodate varying wastewater flow conditions, and identify wastewater system modifications and expansions necessary to accommodate future flows. Update this model annually to account for changes in the Regional Plan and/or changes in development patterns.

Strategy F1.3e Review current solids handling practices at existing wastewater treatment plants and determine future solids handling requirements based on estimated wastewater flow projections.

Strategy F1.3f Development of Capital Improvement Program, including capital, operation and maintenance costs, in order to develop and maintain a robust wastewater collection system to provide a high level of wastewater service to Flagstaff customers.

Policy F 1.4 The City will prepare a Strategic Technology Master Plan specifically looking at the Utilities Supervisory Control and Data Acquisition System (SCADA) every (3) years due to the rapid change in technology and ~~that~~ should considers the following:

Strategy F1.4a Evaluate the use of technology within the utility industry as it relates to supporting the business goals and objectives of the department.

Strategy F1.4b Technology should be aligned with the City enterprise systems.

Strategy F1.4c Evaluate the use of technology within the following application areas:

i. Computerized Maintenance Management Systems
ii. Electronic Operation & Maintenance Manuals-future
iii. Geographic Information System-Utility based applications
iv. Mobile Wireless Computing
v. Inter and intra-facility Networking (WAN and LAN)
vi. Modeling
vii. Application integration
viii. Provide Process Control & Monitoring (SCADA)
ix. Information Technology Security
x. Water Quality and Laboratory Information Management

ii. Web and e-Business

Strategy F1.4d Develop a list of recommended projects to be implemented, including their capital cost, annual Operation and Maintenance costs, man-hours to implement and levels of support required.

## G. Regional Cooperation and Leadership

The City is often engaged in numerous regional/state-wide organizations to develop policy or position statements on water issues that impact Flagstaff. These have included being active with the Northern Arizona Municipal Water Users Association, Arizona Department of Water Resources (ADWR), Federal Emergency Management Agency (FEMA), USEPA, ADEQ, Northern Arizona University (NAU), U.S. Bureau of Reclamation (BOR), U.S. Geological Survey (USGS), Coconino Plateau Water Advisory Committee (CPWAC), Salt River Project, Central Arizona Project, and various state-led forums. Additionally, the City needs to work collaboratively with the Navajo Nation and Hopi Tribe regarding regional water issues. Since water management decisions made today have long term implications, it is prudent that the City remains involved in influencing regional and State water policy and should consider the following:

### G1 Collaboration with Tribal Governments

Policy G1.1 The City should foster and maintain professional relationships with the Tribal governments of the Navajo Nation and Hopi Tribe regarding regional water issues.

Strategy G1.1a the Mayor or their designee should establish and maintain a professional relationship with the elected officials of each tribe in order to stay informed, work collaboratively and influence policy decisions that may affect the City of Flagstaff's water supplies.

Strategy G1.1b the City Manager or their designee should establish and maintain a professional relationship with the government officials of each tribe in order to stay informed, work collaboratively and influence policy decisions that may affect the City of Flagstaff's water supplies.

Strategy G1.1c the Utilities Division staff should establish and maintain a professional relationship with the water resource staff of each tribe in order to stay informed, work collaboratively and influence policy decisions that may affect the City of Flagstaff's water supplies.

### G2 Collaboration with Water Agencies, and Associated Water Groups

Policy G2.1 The City should foster and maintain professional relationships with water management, water quality, flood control and water delivery agencies.

Strategy G2.1a the Mayor or their designee should establish and maintain a professional relationship with the appropriate counter-parts within these organizations in order to stay informed, work collaboratively and influence policy decisions that may affect the City of Flagstaff's water supplies.

Strategy G2.1b the City Manager or their designee should establish and maintain a professional relationship with the appropriate counter-parts within these organizations in order to stay informed, work collaboratively and influence policy decisions that may affect the City of Flagstaff's water supplies.

Strategy G2.1c the Utilities Division staff should establish and maintain a professional relationship with the appropriate counter-parts within these organizations in order to stay informed, work collaboratively and influence policy decisions that may affect the City of Flagstaff's water supplies.

## G3 Water Rights Acquisition

Policy G3.1 The City should demonstrate regional leadership in water management and water policy by participating in:

a. Competition for limited renewable water supplies.
b. Protection of existing water rights and water supplies.
c. Protection of environmentally sensitive riparian areas.
d. Collaboration/partnerships with adjacent water providers.
e. Water source and infrastructure financing.
f. ADWR Water Adequacy and Management Plans.
g. Intergovernmental and interagency relationships.
h. Collaborate National Pollutant Discharge Elimination System (NPDES) compliance efforts with other jurisdictions.
i. Maintain relationships with FEMA and ADWR respecting flood control and National Flood Insurance Program (NFIP) issues.

## H. Water Security

The Mission of the City of Flagstaff Utilities Division is to provide safe water, wastewater, reclaimed water and stormwater services to the City of Flagstaff customers. Drinking water safety and maintaining security of the City's wastewater and stormwater collection systems is a primary concern of the Utilities Division for utility system employees and the community.

### H1 Water Supply Security

Policy H1.1 The Utilities Division shall follow the recommendations of the Public Health Security and Bioterrorism Preparedness and Response Act enacted by the Federal Government and the Water System Vulnerability Assessment prepared in November 2003 and their updates specifically prepared to follow this guidance act.

Strategy H1.1a Security - Implement security improvements as funds become available as recommended in the vulnerability assessment reports.

Strategy H1.1b Assessment – conduct updates to vulnerability assessments on a periodic basis and maintain confidentially of any vulnerabilities identified.

### H2 Infrastructure Security

Policy H2.1 The Utilities Division shall limit access to the public from sensitive information and critical areas of the utility infrastructure in order to minimize the threat of attack or compromise of the Utilities Division's services. The Utilities Division develops an annual Report to the Water Commission that contains a variety of potential sensitive infrastructure information.

Strategy H2.1a Restrict Tours - Restrict public tours of the treatment facilities and/or limit access to critical portions of the plants.

Strategy H2.1b Limit Information to Public - Balance the public's right to know versus Utilities need for public safety. Develop guidelines on restrictions to the public including access to the annual Report to the Water Commission.

Strategy H2.1c Report Suspicious Behavior - Utilities Division staff need to be aware of and report suspicious behavior near critical facilities.

Strategy H2.1d SCADA Information Security - The Utilities Division treatment plant facilities utilize a process control and monitoring system known as a Supervisory Control and Data Acquisition (SCADA) system in order to track information electronically and safely operate and control each treatment plant. These SCADA systems need to be physically isolated from all other computer networks and their network access restricted to minimize their potential to be infected by virus or malicious intent.

**H3 Discharge Control for Sanitary and Stormwater Systems**

Policy H3.1 Utilities shall maintain programs to control the type of materials and substances that are allowed to be discharged or placed into the sanitary and stormwater systems.